SF STILLAGUAMISH VEGETATION PROJECT ERRATA
FINAL ENVIRONMENTAL ASSESSMENT

Final EA Page #s:	pages 6, 7 and Appendix B
Existing Heading:	1.1.4 Enhancement Opportunities
Paragraph #:	paragraph 1 thru paragraph 11
Existing Situation:	Section 1.1.4 included a number of typographic errors, and did not include the references cited on pages 6 and 7 in Appendix B - References
Corrected Situation:	An updated Section 1.1.4 with references is provided below and an updated Appendix B uploaded to the forest website
Context:	The references in section 1.1.54 were inadvertently missed in the merging of references for the EA, and typographic errors missed in the citing of references.

1.1.4 Enhancement Opportunities

The current conditions of second growth stands in the project area were assessed for the opportunity to better meet desired late-successional structure and Riparian Reserve condition for a variety of species. Past timber harvesting crossed both upland slopes, riparian areas and streams, and while there was some pre-commercial thinning, much of the current stands have high tree densities, little diversity of understory, and limited stand structure in canopy height. See USDA Forest Service 1995, p.3-25. The high stocking levels and homogenous stand conditions limit the development of stand structure for old forest associated species.

There is strong scientific support for active management of dense plantations to meet desired conditions. Jerry Franklin, professor at the University of Washington, who specializes in old-growth forest ecology, as well as other researchers and scientists support thinning at different densities so that variable pathways can be established and biodiversity supported (Kohm and Franklin (1997), Lindermayer and Franklin (2002), Franklin et al. (2002), Franklin and Johnson (2010) and Churchill, et al.(2013).

Forest management can promote bio complexity (Carey et al. 1999b). Thinning influences all forest structuring processes, including decadence and development of spatial heterogeneity. To restore degraded ecosystems, including establishment of biologically diverse and complex forests, active management, thinning, is needed (Carey and Curtis 1996; Lindenmayer and Franklin 2002, Carey 2003).

Studies by Harrington et al (2005), Reutebush et al. (2004), Roberts et al. (2007) and Roberts and Harrington (2008) reported tree growth in thinned stands responded in a fairly short time with different growth response increasing structural diversity. Understory plant response to thinning was rapid. Harrington et al. (2004) described results from the Habitat Development Study in Washington, which treated stands 35-62 years old. The authors found that understory vegetation increased in coverage in almost all treatments and sub treatments.

Ares et al. (2009) described results from the Density Management Study in Oregon. This study found that understory vegetation richness increased 6 years after imposing 3 different thinning treatments in 40-

60 year old stands, with increasing stand complexity from the recruitment of early seral and forest herbs, and both low and tall shrubs. This study also reported even greater species richness when prescriptions included gaps and leave islands as part of a variable thinning treatment. Increased overstory variability encouraged development of multiple layers of understory vegetation. Trees retained per acre ranged from 121 in the light thin to 40 in the heaviest thin.

Neil and Puttermann (2013) assessed management practices on understory vegetation related to wildlife habitat with adjustments in overstory density and forest stand thinning. Thinning contributed to increased understory cover and diversity of wildlife forage and insect-pollinated species. Dodsen et al. (2012) concluded that thinning contributed to the development of a diverse plant understory, with plan groups having differing successional status, growth form and structure. Thinning may also influence ecosystem resilience by enhancing forest stand functional effects and response diversity.

Chan et al. (2006) concluded that in areas such as west slope forests, light availability is a principal driver in many of the processes that lead to increasing stand diversity and complexity. Bailey and Tappeiner (1998) concluded that thinning young Douglas-fir stands can set young stands on a trajectory towards achieving overstory and understory attributes similar to those in old-growth stands by promoting the development of understory tree species and tall- and low-shrub species.

Andrews et al. (2005) also confirmed that without silvicultural intervention or natural disturbances, young dense stands (170–247 trees/ac) would be unlikely to develop habitat features supporting spotted owl nesting within 160-year total stand age. Andrews et al. (2005) suggested that heavy thinning at ages 50 and 80 years, followed by tree-planting and additional thinning, would aid in development of forest patches structurally similar to habitat utilized by spotted owl for nest sites.

Cahall, R. E., et al. (2013) found long-term response by forest birds to experimental thinning supports the "Field of Dreams" hypothesis. Implementing thinning at intervals across the landscape provides development of different seral stages and stand-structures Thinning done while also maintaining unthinned areas for species negatively impacted by thinning, will likely have the greatest positive impact on beta diversity of birds in managed plantation landscapes.

Olson D.H. et al (2014) reported on findings from studies over a 10 year post-treatment period monitoring amphibian counts in old clear-cuts after subsequent thinning with various riparian buffer widths. The studies documented the headwater persistence of amphibians in managed headwater areas and resiliency of water fauna to habitat management. The study acknowledged potential risks from the riparian management with buffers of > 6-15 meters on streams, but found some positive response of species with these buffer widths. These studies suggest a mixed-buffer width approach, especially in drainages with other stream reaches not managed, provides long-term ecological restoration and addresses biodiversity.

The preponderance of the best available scientific evidence demonstrates thinning in dense managed stands can enhance conditions favorable for developing old growth upland and riparian forest characteristics and increasing habitat diversity.

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Final EA Page #: 22, 36, 44 and 45

Existing Heading: Figures 5, 9, 10, and 11

Paragraph #: NA

Existing Text: Road 4065 is displayed as a Maintenance Level 2 road in the following figures:

- Figure 5. Alternative 2,
- Figure 9. Open roads and current road maintenance levels (ML) and ML under proposed Alternative 2,
- Figure10. Map of Alternative 2A and
- Figure 11. Map of Alternative 2B

Corrected Text: Road 4065 is displayed as a Maintenance Level 3 road in the Final Decision Notice map of selected Alternative 2 B

Context: mapping display error in Road ML.

Final EA Page #: 25

Existing Heading: 2.2.2.3 Forest Vegetation Management

Paragraph #: Paragraph 6

Existing Text: 1. Heavy thinning areas would be used to emphasize large tree growing space and increase understory vegetation. Thinning would be from below to approximately 20-50 trees per acre, retaining hardwoods and minor conifer species. Heavy thinning areas would be approximately ½ acre to 3 acres in size and cover approximately 3-10 percent of the stand area. Heavy thinning would only be prescribed in stands or areas with low windthrow potential.

2. Gaps would be created to increase stand heterogeneity, and culture individual trees specifically for big crowns and limbs. All conifers larger than the minimum diameter limit (for merchantability) and less than 20 inches DBH would be removed from gaps, while all hardwoods would be retained. Gaps would be approximately ¼ to ½ acre in size and cover 3-10% of the total stand area and avoid be located immediately adjacent to old growth forest or potential nest trees.

Corrected Text: 1. Heavy thinning areas would be used to emphasize large tree growing space and increase understory vegetation. Thinning would be from below to approximately 20-50 trees per acre, retaining hardwoods and minor conifer species. Heavy thinning areas would be approximately ½ acre to 3 acres in size and in combination with gaps cover approximately 3-10 percent of the stand area. Heavy thinning would only be prescribed in stands or areas with low windthrow potential.

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Context: Clarification of total area (3-10%) in gaps and heavy thinning is a combination of those treatments

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Final EA Page #: 43 and 216

Existing Heading: 2.2.3.3 Actions Specific to Alternative 2B

Paragraph #: Paragraph 4

Existing Text: Access and Travel Management

Alternative 2B would provide the same road management strategy as in Alternative 2. System roads accessing stands classified as non-commercial at this time would be retained in storage (ML 1) for administrative use in future treatments. Non-specified roads would be candidates for decommissioning.

Alternative 2B would differ from Alternative 2 and 2A with the potential for additional road decommissioning on some road systems. For example, the treatment of optional acres could complete stand treatment or thinning in the Blackjack Creek to Bender Creek area on Road 4031 (beyond the junction with 4031-015). This would result in the accomplishment of desired thinning at this time and provide for the opportunity to decommission approximately 2.5 miles of road that is currently in storage (ML1) in the No Action Alternative, Alternative 2 and Alternative 2A. Alternative 2B could provide final stand treatments for stands located at the end of roads, such as Road 4031 which would preclude need for future administrative access for that road segment of Road 4031

Corrected Text: Access and Travel Management

Alternative 2B would provide the same road management strategy as in Alternative 2. System roads accessing stands classified as non-commercial at this time would be retained in storage (ML 1) for administrative use in future treatments. Non-specified roads would be candidates for decommissioning.

Alternative 2B would differ from Alternative 2 and 2A with the potential for additional road decommissioning on some road systems. For example, the treatment of optional acres could complete stand treatment or thinning in the Blackjack Creek to Bender Creek area on Road 4031 (beyond the junction with 4031-015). This would result in the accomplishment of desired thinning at this time and provide for the opportunity to decommission approximately 2.5 miles of road that is currently in storage (ML1) in the No Action Alternative, Alternative 2 and Alternative 2A. Alternative 2B could provide final stand treatments for stands located at the end of roads, such as Road 4031 which would preclude need for future administrative access for that road segment of Road 4031

This project provided an opportunity to begin the needed assessment of recommendations in the Sustainable Road System Report (2015) for the road system within the project area of the SF of the Stillaguamish (Purpose and Need 1.3). Alternative 2b would:

- Decommission approximately 17 miles of National Forest System road no longer needed for forest management (currently non-drivable).

- Store an additional 15 miles of road (ML 1) for a total of approximately 60 miles in closed ML1 status.
- Manage 14 miles in ML2 for high-clearance vehicles with an additional approximately 8 miles in ML2A administratively closed status (providing gated access to private land or rock sites).
- Manage approximately 41 miles as ML 3 (passenger vehicle) with all trailheads accessible by ML 3 roads.
- Retain approximately 5 miles of ML 4 (passenger comfort) road.
- Convert approximately 1.8 miles (3 road segments) from NFS road to trail.
- Use and then decommission approximately 23 miles of non-system roads.

Context: The addition of the road summary description provides clarification of how Alternative 2b varies from Alternative 2, as well as provides correction in the road summary information. On Page 213, the road system summary is corrected as described above for Alternative 2b.

Final EA Page #: 145

Existing Heading: 3.7.1.2 Threatened and Endangered Wildlife

Paragraph #: Paragraph 4 – Spotted Owl Disturbance

Existing Text: Approximately 1,685 acres of suitable nesting, roosting, and foraging habitat occurs within 65 yards of areas with expected noise generating activities.

Corrected Text:

Approximately 1,685 acres of suitable nesting, roosting, and foraging habitat occurs within 65 yards of areas with expected noise generating activities. Proximity to suitable nesting, roosting and foraging habitat was used for assessment of disturbance since no surveys for spotted owls were conducted during field reconnaissance. Surveys were not conducted due to the lack of spotted owl response during recent surveys in historic spotted owl habitat and due to frequent barred owl responses. Negative spotted owl survey results (2010 CERCLA project) raised the concern that vocal barred owls may be inhibiting spotted owl response so the assessment of habitat occupancy for areas surveyed to protocol without spotted owl response was to assume potential occupancy if the habitat was still suitable. There was also concern that survey attempts to elicit spotted owl calls could make spotted owl presence known to barred owls, and make the spotted owls more vulnerable to harassment from the barred owls. Therefore the Forest elected to not survey for spotted owls and assume owl presence if habitat was suitable.

Context: The addition of the description of why there were no spotted owl surveys provides clarification of how the disturbance acreage was determined.